

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): A high sensitivity receiver comprising
reception bandpass filter means for receiving a radio frequency signal as an input and
for passing a signal in a desired frequency band;
a low noise reception amplifier for providing low noise amplification of an output
signal from the reception bandpass filter means to a desired level;
a laser diode for converting an output signal from the low noise reception amplifier to
an optical signal to be delivered;
a heat shielding box for confining the reception bandpass filter means, the low noise
reception amplifier and the laser diode therein; and
and a cooling means for cooling the interior of the heat shielding box,
wherein the reception bandpass filter means, the low noise reception amplifier and the
laser diode are divided into s groups and the cooling means includes s cooling units each
cooling one of the groups where s is one of 1, 2 or 3.

Claim 2 (Cancelled).

Claim 3 (Currently Amended): A high sensitivity receiver according to Claim 1,
further comprising:
an array antenna formed by n antenna elements where n is an integer equal to or
greater than 2; and
and a phase shifter ~~synthesizer~~ combiner for receiving received signals from the n
antenna elements, adjusting phase differences between the received signals and ~~synthesizing~~

combining them to deliver a synthesized combined output as said radio frequency signal to said reception bandpass filter means.

Claim 4 (Currently Amended): A high sensitivity receiver according to Claim 3 in which the phase shifter synthesizer combiner is disposed within the heat shielding box to be cooled.

Claim 5 (Currently Amended): A high sensitivity receiver ~~according to Claim 1,~~ further comprising:

reception bandpass filter means for receiving a radio frequency signal as an input and for passing a signal in a desired frequency band;

a low noise reception amplifier for providing low noise amplification of an output signal from the reception bandpass filter means to a desired level;

a laser diode for converting an output signal from the low noise reception amplifier to an optical signal to be delivered;

a heat shielding box for confining the reception bandpass filter means, the low noise reception amplifier and the laser diode therein;

a cooling means for cooling the interior of the heat shielding box;

an array antenna formed by n antenna elements where n is an integer equal to and greater than 2;

and a phase shifter for receiving received signals from the n antenna elements as inputs and for adjusting phase differences between the received signals to deliver n signals;

said radio frequency signal being n output signals from the phase shifter, which are input to the reception bandpass filter means which comprises n filters for passing signals in desired frequency bands;

said low noise reception amplifier including n amplifiers, into which the n filter output signals are input respectively;

and a synthesizer combiner for synthesizing combining output signals from the n amplifiers to provide an input to the laser diode; and

the phase shifter and the synthesizer combiner being disposed within the heat shielding box to be cooled,

wherein the reception phase shifter, the reception bandpass filter means, the low noise reception amplifier, the combiner and the laser diode are divided into s groups and the cooling means includes s cooling units each cooling one of the groups where s is one of 1, 2, 3, 4 or 5.

Claim 6 (Cancelled).

Claim 7 (Currently Amended): A high sensitivity receiver ~~according to Claim 1, further comprising:~~

reception bandpass filter means for receiving a radio frequency signal as an input and for passing a signal in a desired frequency band;

a low noise reception amplifier for providing low noise amplification of an output signal from the reception bandpass filter means to a desired level;

a laser diode for converting an output signal from the low noise reception amplifier to an optical signal to be delivered;

a heat shielding box for confining the reception bandpass filter means, the low noise reception amplifier and the laser diode therein;

a cooling means for cooling the interior of the heat shielding box;

an array antenna formed by n antenna elements where n is an integer equal to or greater than 2;

said radio frequency signal being signals received by the n antenna elements, the reception bandpass filter means comprising n filters each receiving a radio frequency signal received by one of n antenna elements for passing a signal in a desired frequency band, the low noise reception amplifier including n amplifiers, to which outputs from the n filters are fed; and

and a phase shifter synthesizer combiner for receiving output signals from the n amplifiers as inputs and for adjusting phase differences between these output signals and for synthesizing combining the output signals to be input to the laser diode,

wherein the reception bandpass filter means, the low noise reception amplifier, the phase shifter combiner and the laser diode are divided into s groups and the cooling means includes s cooling units each cooling one of the groups where s is one of 1, 2, 3 or 4.

Claim 8 (Cancelled).

Claim 9 (Currently Amended): A high sensitivity receiver ~~according to Claim 1 comprising:~~

reception bandpass filter means for receiving a radio frequency signal as an input and for passing a signal in a desired frequency band;

a low noise reception amplifier for providing low noise amplification of an output signal from the reception bandpass filter means to a desired level;

a laser diode for converting an output signal from the low noise reception amplifier to an optical signal to be delivered;

a heat shielding box for confining the reception bandpass filter means, the low noise reception amplifier and the laser diode therein; and
a cooling means for cooling the interior of the heat shielding box,
in which wherein the cooling means includes a cooling unit formed by a cooling plate and at least one other cooling unit formed by a cooling plate in combination with a heat resistance member for cooling one or more of the reception bandpass filter means, the low noise amplifier and the laser diode to mutually different temperatures.

Claim 10 (Currently Amended): A high sensitivity receiver ~~according to Claim 1~~ comprising:

reception bandpass filter means for receiving a radio frequency signal as an input and for passing a signal in a desired frequency band;
a low noise reception amplifier for providing low noise amplification of an output signal from the reception bandpass filter means to a desired level;
a laser diode for converting an output signal from the low noise reception amplifier to an optical signal to be delivered;
a heat shielding box for confining the reception bandpass filter means, the low noise reception amplifier and the laser diode therein; and
a cooling means for cooling the interior of the heat shielding box,
in which wherein said cooling means includes a plurality of cooling means, each of which cools one or two of the reception bandpass filter means, the low noise reception amplifier and the laser diode to mutually different temperatures.

Claim 11 (Currently Amended): A high sensitivity receiver ~~according to Claim 1~~ comprising:

reception bandpass filter means for receiving a radio frequency signal as an input and for passing a signal in a desired frequency band;
a low noise reception amplifier for providing low noise amplification of an output signal from the reception bandpass filter means to a desired level;
a laser diode for converting an output signal from the low noise reception amplifier to an optical signal to be delivered;
a heat shielding box for confining the reception bandpass filter means, the low noise reception amplifier and the laser diode therein; and
and a cooling means for cooling the interior of the heat shielding box,
in which wherein said cooling means includes a plurality of cooling unit formed by a cooling member, each of which cools one or more of the reception bandpass filter means, the low noise reception amplifier and the laser diode to mutually different temperatures.

Claim 12 (Currently Amended): A high sensitivity receiver ~~according to Claim 1,~~
~~further~~ comprising:

reception bandpass filter means for receiving a radio frequency signal as an input and for passing a signal in a desired frequency band;
a low noise reception amplifier for providing low noise amplification of an output signal from the reception bandpass filter means to a desired level;
a laser diode for converting an output signal from the low noise reception amplifier to an optical signal to be delivered;
a heat shielding box for confining the reception bandpass filter means, the low noise reception amplifier and the laser diode therein;
a cooling means for cooling the interior of the heat shielding box;

a power distributor connected between the low noise reception amplifier and the laser diode for branching part of the signal which is input to the laser diode; and
a bias current control means for controlling a bias current supplied to the laser diode in accordance with the power level of the signal which is branched by the power distributor.

Claim 13 (Currently Amended): A high sensitivity receiver ~~according to Claim 1,~~
~~further comprising:~~

reception bandpass filter means for receiving a radio frequency signal as an input and
for passing a signal in a desired frequency band;

a low noise reception amplifier for providing low noise amplification of an output
signal from the reception bandpass filter means to a desired level;

a laser diode for converting an output signal from the low noise reception amplifier to
an optical signal to be delivered;

a heat shielding box for confining the reception bandpass filter means, the low noise
reception amplifier and the laser diode therein;

a cooling means for cooling the interior of the heat shielding box;

a pilot signal generator preceding the laser diode for generating a pilot signal which is to be added to said radio frequency signal;

an optical/electrical transducer for transducing the optical signal into an electric signal;

a branching filter for selecting the pilot signal from an electrical output signal from the optical/electrical transducer;

a level detector for detecting the level of the pilot signal which is filtered by the branching filter; and

and a monitor for comparing the level of the detected pilot signal against a preset threshold to detect the occurrence of a fault in at least the laser diode.

IN THE DRAWINGS

The attached sheets of drawings include changes to Figs. 2, 17-25, and 29. These sheets, which include Figs. 2, 17-25, and 29, replace the original sheets including Figs. 2, 17-25, and 29.

Attachment: Replacement Sheets